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Appl. No. 09/612,976
Amdt. dated November 23, 2004
Reply to Office action of August 24, 2004

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) At a near end of a transmission system, a method of mapping client data into an outgoing block, said outgoing block comprising payload words and overhead words, so as to transfer said client data and clock synchronization information associated with said client data to a far end of said transmission system, said method comprising:

receiving client words of an incoming flow of said client data;

generating fill words;

mapping said payload words into said outgoing block, where:

each of a first plurality of said payload words comprises one of said client words;
and

each of a second plurality of said payload words comprises one of said fill words;

adjusting a rate at which said client words are mapped such that an average number of said client words mapped is equal to an average number of said client words received;

including an indication of said rate in said overhead words; and

mapping said overhead words into said outgoing block.

2. (original) The method of claim 1 wherein said indication of said rate comprises a first value (YNOM) representative of a nominal magnitude of said rate and an indicator (YOFF) of an offset from said nominal magnitude.

3. (original) The method of claim 2 further comprising:

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detecting a difference between a number of said client words received and a number of said client words mapped; and

converting said difference to said offset indicator.

4. (original) The method of claim 3 further comprising, before said converting, filtering said difference and utilizing said filtered difference to optimize said adjusting of said rate.

5. (original) The method of claim 2 further comprising generating a first timing signal, where said mapping said payload words into said outgoing block comprises mapping one of said first plurality of said payload words as triggered by said first timing signal.

6. (original) The method of claim 5 wherein said adjusting said rate at which said client words are mapped comprises adjusting said first timing signal.

7. (original) The method of claim 5 further comprising:

while mapping said payload words into said outgoing block, increasing an accumulated sum in an accumulator, at each tick of a near end system clock, by a sum of said offset indicator and said nominal magnitude of said rate; and

responsive to mapping one of said payload words and where said accumulated sum is greater than a pre-set amount, decreasing said accumulated sum by said pre-set amount.

8. (original) The method of claim 7 further comprising, while mapping said overhead words into said outgoing block, increasing said accumulated sum in said accumulator, at each said tick of said far end system clock, by said sum of said offset indicator and said nominal magnitude of said rate.

9. (original) The method of claim 7 further comprising:

responsive to said decreasing said accumulated sum, generating a flag; and

deriving said first timing signal from said flag.

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10. (original) The method of claim 7 further comprising:

determining a synchronization (sync) indicator, at a given point relative to a beginning of a data structure for said outgoing block, for use in synchronizing a second timing signal, at said far end of said transmission system, with said first timing signal; and

including said sync indicator in one of said overhead words.

11. (original) The method of claim 10 further comprising sampling, at said point relative to said beginning of said data structure, said accumulated sum in said accumulator.

12. (original) The method of claim 11 wherein said data structure is a SONET synchronous payload envelope.

13. (original) The method of claim 2 further comprising storing said first value representative of said nominal magnitude of said rate.

14. (original) The method of claim 2 further comprising:

recovering a clock signal from said incoming flow of client data;

converting said incoming flow of client data from serial bits to said client words; and

converting said clock signal to a parallel clock signal.

15. (original) The method of claim 1 further comprising including error correction and detection information in said overhead words.

16. (original) A mapping processor comprising:

means for receiving client words of an incoming flow of client data;

means for generating fill words;

means for mapping payload words into an outgoing block, where:

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each of a first plurality of said payload words comprises one of said client words;
and

each of a second plurality of said payload words comprises one of said fill words;

means for adjusting a rate at which said client words are mapped such that an average number of said client words mapped is equal to an average number of said client words received;

means for including an indication of said rate in a plurality of overhead words; and

means for mapping said plurality of overhead words into said outgoing block.

17. (original) A mapping processor comprising:

a receiver for receiving client words of an incoming flow of client data;

a fill unit for generating fill words;

a mapping unit for:

adjusting a rate at which said client words are mapped such that an average number of said client words mapped is equal to an average number of said client words received;

including an indication of said rate in a plurality of overhead words;

mapping payload words into an outgoing block, where:

each of a first plurality of said payload words comprises one of said client words;

each of a second plurality of said payload words comprises one of said fill words; and

mapping said plurality of overhead words into said outgoing block.

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18. (original) A mapping processor operable to:

receive client words of an incoming flow of client data;

generate fill words;

map payload words into an outgoing block, where:

each of a first plurality of said payload words comprises one of said client words;
and

each of a second plurality of said payload words comprises one of said fill words;

adjust a rate at which said client words are mapped such that an average number of said client words mapped is equal to an average number of said client words received;

include an indication of said rate in a plurality of overhead words; and

map said plurality of overhead words into said outgoing block.

19. (original) A computer readable medium for providing program control to a mapping processor, said computer readable medium adapting said processor to be operable to:

receive client words of an incoming flow of client data;

generate fill words;

map payload words into an outgoing block, where:

each of a first plurality of said payload words comprises one of said client words;
and

each of a second plurality of said payload words comprises one of said fill words;

adjust a rate at which said client words are mapped such that an average number of said client words mapped is equal to an average number of said client words received;

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include an indication of said rate in a plurality of overhead words; and

map said plurality of overhead words into said outgoing block.

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